CALL FOR PROPOSAL

Title: **Influence of Agricultural Production on Pronghorn Movements, Distribution, and Behavior in the Texas Panhandle**

Contact: **Shawn Gray (shawn.gray@tpwd.texas.gov)**

Introduction

Pronghorn can be found in both the High Plains and Rolling Plains ecological regions of the Texas Panhandle where they occupy flat to rolling short grass prairie, sand hills, and open breaks. Pronghorn inhabit approximately 27 of the 56 counties in the Panhandle Wildlife District.

Currently, there is no research data available regarding pronghorn movements and habitat preferences in the Texas Panhandle. In addition, influence of agricultural production and the effects of habitat fragmentation on pronghorn populations are poorly understood.

Pronghorn numbers have increased in the Panhandle over the last 10–15 years and continue to expand their range across the ecoregion. Pronghorn have become an important source of income to many landowners; however, other land managers (e.g., farmers) consider them a nuisance, and crop depredation complaints have increased over the years. Farming has negatively impacted wildlife habitat through fragmentation, but plantings of grain and legume crops have increased the nutritional plane of many game species. Panhandle pronghorn are known to use a variety of agricultural crops seasonally, including wheat, peanuts, milo/sorghum, alfalfa, corn, and other crops. These crops may put pronghorn on a higher nutritional plane resulting in greater body weights, horn development, and fawn survival. Localized concentrations of pronghorn on a variety of agricultural fields provide landowners with the perception that densities are high; therefore, landowner requests for buck and doe permits have increased as a result. This perception also promotes false expectations among many landowners regarding the number of bucks that can be harvested during the hunting season.

To date, data is nonexistent regarding pronghorn movements in the Panhandle, and the extent and influences of their movements are educated conjecture, at best. Formulating and implementing pronghorn management decisions is difficult when basic movement, behavior, and ecology are largely unknown as they relate to agricultural production.

Justification

The 2013 Land and Water plan contains four specific goals. Research to further our knowledge of pronghorn movements and behavior in the Panhandle would fall within goal one and associated strategies: Practice, encourage and enable science-based stewardship of natural and cultural resources. TPWD will maintain the highest level of scientific validity and credibility.

Objectives

Study design should evaluate sex- and age-specific (adult) pronghorn movements and distribution in relation to agriculture crop types, dryland or artificial supplemental irrigation, and other habitat and structural (roads, fences, etc.) components yearly and seasonally (e.g., breeding, gestation, parturition, and lactation) at multiple scales.

A minimum of two study sites that are located in the NE (Pampa area) and NW Panhandle (Dalhart area) should be used and are priority. The use of GPS radio-collars will be essential to get movement information that is more reliable and accurate. A statistically sound number of adult bucks and does should be radio-collared at each study site to appropriately determine movements, distribution, and habitat use. Conducting research for a minimum of two years concurrently at each study site is necessary to collect meaningful data. In addition, having GPS radio-collars active and acquiring locations throughout an entire year are crucial to detect movements and usage of important resources during different time periods (e.g., October–December when pronghorn typically shift to winter wheat).

In the Texas Panhandle the proportions and types of crops grown changes annually based upon a host of uncontrollable factors (i.e., irrigation, economy, commodity prices, climate forecasts, CRP enrollments, etc.). Further, crop phenology and irrigation timing and amount can vary depending upon seasonal ambient temperatures and precipitation amount and timing. These variables can influence seasonal use of rangeland versus agriculture by pronghorn. It is important that multiple scale (fine and coarse) variables be considered when modeling habitat use and selection because forage quantity and quality can vary by spatial scale. Weather data should be collected to help evaluate habitat use during different weather patterns and seasons. Movement barrier coverages (roads, fences, etc.) must also be considered when evaluating habitat use, movements, and distribution. Understanding how factors such as habitat type, fragmentation, landscape features, and physiological status influence pronghorn movements and agriculture use is needed to improve pronghorn management in the Panhandle.

Expected Management Implications

This project will provide new and essential information regarding seasonal movements of pronghorn in the Texas Panhandle in relation to differing habitats and land use practices. Results will document positive and/or negative impacts of agriculture production on pronghorn biology and habitat. Additionally, results obtained from this research may provide information to help manage crop depredation complaints without adversely impacting the pronghorn resource.

Evaluating the effect of habitat fragmentation on pronghorn movements, distribution, and behavior will afford biologists with much needed data to enhance management of Panhandle pronghorn. The Department is currently testing a change in harvest strategy by allowing landowners to determine the buck harvest

quota for their property. Versus TPWD setting harvest quotas and issuing permits directly to landowners for surplus buck pronghorn. Information from this project will aid in deciding whether to make a permanent change to a landowner controlled harvest strategy for bucks in the northern Panhandle. In addition, study results will provide biologists with needed information to improve harvest quotas and recommendations to landowners and hunters throughout the Panhandle.